

10 CFR 50.73(a)(2)(iv)(A)

March 29, 2012

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555-0001

Subject: **Docket No. 50-362**
LER 2012-001-00, Unit 3 Manual Reactor Trip due to Steam Generator
Tube Leak
San Onofre Nuclear Generating Station (SONGS), Unit 3

Dear Sir or Madam:

Attached is Licensee Event Report (LER) 2012-001-00, which is being submitted in accordance with 10 CFR 50.73(a)(2)(iv)(A).

This letter does not contain any commitments. If you have any questions regarding the attached report, please call Lee Kelly at 949-368-6657.

Sincerely,



Attachment: LER 2012-001-00

cc: E.E. Collins, Regional Administrator, NRC Region IV
R. Hall, NRC Project Manager, SONGS Units 2 and 3
G.G. Warnick, NRC Senior Resident Inspector, SONGS Units 2 and 3

LICENSEE EVENT REPORT (LER)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME

San Onofre Nuclear Generating Station (SONGS) Unit 3

2. DOCKET NUMBER

05000362

3. PAGE

1 of 3

4. TITLE

Unit 3 Manual Reactor Trip due to Steam Generator Tube Leak

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
01	31	2012	2012-001-00			03	29	2012	N/A	N/A
9. OPERATING MODE 1			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)							
10. POWER LEVEL 100%			<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)				
			<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)				
			<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)				
			<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)				
			<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)				
			<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)				
			<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)				
			<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER				
			<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A				

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Douglas R. Bauder, Site Vice President and Station Manager	949-368-9275

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
B	SG	TBG	M380	Y			N/A		

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On 01/31/2012 at 1505 PST, SONGS Unit 3 was in Mode 1 operating at 100 percent power, when a high radiation alarm from the condenser air ejector monitor indicated a tube leak in one of the two steam generators (SGs). A rapid power reduction was commenced in accordance with plant procedures when the primary to secondary leak rate was determined to be greater than 75 gallons per day (gpd) with an increasing rate of leakage exceeding 30 gpd per hour. At 1731 PST, the operators manually tripped the reactor at 35 percent power as directed by procedure, resulting in actuation of the Reactor Protection System which is reportable. All control rods inserted to shutdown the reactor. Safety systems responded as designed. SG level was maintained using the main feedwater system. Decay heat was removed through the main steam bypass valves to the condenser; no atmospheric relief valves lifted during the trip. The affected SG was isolated. The reactor was placed in a stable cold shutdown condition in Mode 5. Small, monitored radioactive releases to the environment occurred, well below allowable limits. Inspection, testing, and analysis of SG tube integrity in both Unit 3 SGs is ongoing. Defective tubes will be removed from service prior to plant startup. Any subsequent required reporting associated with tube degradation will be addressed in a separate report.

NRC FORM 366A (10-2010)		U.S. NUCLEAR REGULATORY COMMISSION		
LICENSEE EVENT REPORT (LER) CONTINUATION SHEET				
1. FACILITY NAME	2. DOCKET	6. LER NUMBER		3. PAGE
San Onofre Nuclear Generating Station (SONGS) Unit 3	05000362	YEAR	SEQUENTIAL NUMBER	REV NO.
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A. REPORTABLE OCCURRENCE

On January 31, 2012, at 1505 hours Pacific Standard Time (PST), San Onofre Nuclear Generating Station (SONGS) Unit 3 was in Mode 1 operating at 100 percent power, when a high radiation alarm [RA] from the condenser air ejector monitor [MON] indicated a tube leak in one of the two steam generators (SGs) [SG]. As directed by procedure, a rapid power reduction and shutdown was commenced. At 1731 PST when power reached 35 percent, the operators manually tripped the reactor, resulting in actuation of the Reactor Protection System (RPS) [JC], which requires a 60-day written report pursuant to 10 CFR 50.73(a)(2)(iv)(A). Within 4 hours of the Unit 3 trip, telephone notification was made to the NRC Emergency Notification System (ENS) as required by 10 CFR 50.72(b)(2)(iv)(B).

B. INITIAL CONDITIONS

At the time of the event on January 31, 2012, SONGS Unit 3 was in Mode 1 with reactor power at approximately 100 percent power. Other than the leaking SG tube, there were no additional inoperable structures, systems, or components at the start of the event that contributed to this event. Unit 2 was in a refueling outage and was unaffected by this event.

SONGS had installed new SGs in both Units 2 and 3 during the previous refueling outages. The replacement SGs were manufactured by Mitsubishi Heavy Industries and the original SGs were supplied by Combustion Engineering. The new Unit 3 SGs were placed into service during plant startup in February 2011. At the time of the event, Unit 2 was in its first refueling outage since SG replacement.

C. DESCRIPTION OF OCCURRENCE

On January 31, 2012, at 1505 PST, SONGS Unit 3 was in Mode 1 operating at 100 percent power, when a high radiation alarm from the condenser air ejector monitor indicated a tube leak in one of the two SGs. The abnormal operating procedure for reactor coolant system (RCS) leakage was entered due to a SG tube leak indication of greater than 5 gallons per day (gpd). At 1610, based on the air ejector radiation monitors, RCS water inventory balance, and SG chemistry samples, the procedural criteria of greater than 75 gpd leakage with an increasing leak rate exceeding 30 gpd per hour was met requiring a reactor shutdown. No entry was required into Technical Specification (TS) Limiting Condition for Operation (LCO) 3.4.13 (shutdown within 10 hours) because RCS operational leakage had not exceeded 150 gpd primary to secondary leakage through any one SG. At 1633, a rapid power reduction and shutdown was commenced as directed by procedure. Reactor power was reduced at about 1 percent per minute and, at 1731 at 35 percent power, operators manually tripped the reactor.

Following the reactor trip, all control rods inserted to shutdown the reactor. Safety systems responded as designed. SG level was maintained using the main feedwater system. Decay heat was removed through the main steam bypass valves to the condenser; no atmospheric relief valves lifted during the trip. At 1800, the affected SG was isolated in accordance with the SG tube rupture emergency operating procedure. Plant cooldown continued using the unaffected SG. Mode 4 (hot shutdown) was entered at 0051 and Mode 5 (cold shutdown) at 1647 on February 1, 2012.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

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Small, monitored radioactive gaseous and liquid releases to the environment occurred, well below allowable limits. The release rates and calculated dose will be included in the 2012 Annual Radioactive Effluent Release Report. The release to the atmosphere via the air ejector vent stack was quantified at 3.75E-2 Curies (noble gases and radioiodine) which is equivalent to 4.25E-5 millirem (mrem) whole body dose. This release was several orders of magnitude below the off-site limit for continuous releases from this vent path of 500 mrem/year.

D. APPARENT CAUSE

A root cause evaluation is being conducted to determine the wear mechanism leading to the tube leak and the extent of condition (see paragraph G below).

E. CORRECTIVE ACTIONSImmediate/Interim Actions

In accordance with plant procedures, reactor power was rapidly reduced and the plant was tripped at 35% power. The affected SG was isolated. The reactor was placed in a stable condition in Mode 5.

Long Term Corrective Actions

Inspection, testing, and analysis of SG tube integrity in both Unit 3 SGs is ongoing (see paragraph G below). Defective tubes will be removed from service as required prior to plant startup.

F. SAFETY ASSESSMENT

No significant anomalies and no safety system functional failures occurred during this event. The reactor trip was uncomplicated. All control rods inserted to shut down the reactor. Safety systems responded as designed. The affected steam generator was isolated. The plant was placed in a stable condition in Mode 5. Small, monitored radioactive releases to the environment occurred, several orders of magnitude below the regulatory limits. Based on the above, the safety significance of this event is considered minimal.

G. ADDITIONAL INFORMATIONPrevious Similar Events

SONGS had not experienced a steam generator tube leak in the SGs currently installed in Units 2 and 3.

SONGS Unit 3 Steam Generator Inspection

Inspection, testing, and analysis of SG tube integrity in both Unit 3 SGs is ongoing. In-situ pressure testing identified eight Unit 3 SG tubes that did not meet the target performance criteria in TS 5.5.2.11 for tube integrity. One of the failed tubes was the leaking tube that required the Unit 3 shutdown reported in this LER. The in-situ testing failures were reported in 8-hour telephone notifications to the NRC in accordance with 10 CFR 50.72(b)(3)(ii)(A) - serious SG tube degradation. A 60-day written report will be submitted under 10 CFR 50.73(a)(2)(ii)(A). The LER reporting the SG tube degradation will address the root cause evaluation being conducted to determine the wear mechanism leading to the tube leak and the extent of condition, as well as additional corrective actions.